Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this application:

66. (Previously Presented) A ligand analog that binds covalently to a nucleophilic receptor (NuR) having the formula

L-E

wherein L is a ligand that binds noncovalently to a NuR and E is an electrophilic group conjugated to a side chain functional group of L having the formula

$Y\text{-}Y'\text{-}Y''\text{-}$

wherein

Y is an electrophilic group that reacts covalently with NuR,

Y' is a charged or neutral group, or is absent, and

Y'' is a linker, covalent bond or atom.

67. (Previously Presented) The ligand analog of claim 66, wherein L is comprised of amino acid, sugar, lipid or nucleotide groups.

68. (Previously Presented) The ligand analog of claim 67, wherein said L is comprised of amino acid groups.

69. (Previously Presented) The ligand analog of claim 66, wherein Y'' is a linker.

70. (Previously Presented) The ligand analog of claim 66, wherein Y' is a charged or neutral group.

71. (Previously Presented) The ligand analog of claim 66, wherein the side chain functional group of L is $-NH_2$, -COOH, -SH or –OH.

72. (Currently Amended) The ligand analog of claim 66, wherein the side chain functional group of L is selected from the group consisting of carboxyl, amino, hydroxyl, sulfhydryl, 4-hydroxy phenyl, phenyl, imidazole, ~~phenyl imidazole,~~ indole, methylthioethyl, guanidino, linear

alkyl, branched alkyl, cyclic alkyl, linear alkenyl, branched alkenyl, cyclic alkenyl, linear alkynyl, branched alkynyl, cyclic alkynyl, aryl, amide, aldehyde, ketone, phosphate or sulfate.

73. (Currently Amended) The ligand analog of claim 66, wherein the side chain functional group of L is a side chain functional group of glycine, alanine, leucine, isoleucine, valine, methionine, cystein, aspartic acid, glutamic acid, asparagine, glutamine, lysine, arginine, phenylalanine, tyrosine, tryptophan, histidine, serine, threonine or proline.

74. (Previously Presented) The ligand analog of claim 66, wherein the ligand is a DNA molecule, a RNA molecule, a polysaccharide or a lipid that binds noncovalently to NuR.

75. (Currently Amended) The ligand analog of claim 66, wherein Y" is a suberoyl, pimeroyl, succinyl, aminohexanoyl, aminoacetyl, poly(ethylene oxide), α,ω-dicarboxyl or acetylenedicarboxyl group.

76. (Previously Presented) The ligand analog of claim 66, wherein Y' is a charged group selected from amino (4-amidinophenyl)methyl, 2,6-diaminopentyl, 1-amino-4-guanidinobutyl, 1-amino-3-carboxylpropyl and amino(4-carboxylphenyl)methyl.

77. (Previously Presented) The ligand analog of claim 66, wherein Y' is a neutral group selected from amino (phenyl) methyl, 1-amino-2-phenylethyl, 1-amino-2-methylbutyl, aminomethyl, 2-aminoethyl and 1-aminocyclohexyl.

78. (Previously Presented) The ligand analog of claim 66, wherein Y comprises an electrophilic atom Z attached to one or more substituents R.

79. (Previously Presented) The ligand analog of claim 78, wherein substituent R is an electron withdrawing group.

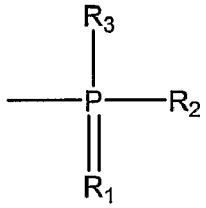
80. (Previously Presented) The ligand analog of claim 79, wherein R is selected from phenoxyl, 4-nitrophenoxyl, 4-cyanophenoxyl, pentachlorophenoxyl, 4-nitrophenyl, 4-cyanophenyl, cyanomethoxyl, trifluoromethoxyl and 4-nitrophenylmercaptyl.

81. (Previously Presented) The ligand analog of claim 78, wherein R is an electron donating group.

82. (Previously Presented) The ligand analog of claim 81, wherein R is selected from 4-methoxphenoxyl, 4-methylphenoxyl, methoxymethoxyl, 4-methoxyphenyl, 4-methylphenyl, methoxymethyl and 4-methoxyphenylmercaptyl.

83. (Previously Presented) The ligand analog of claim 78, wherein Z is a phosphorus, carbon, boron or vanadium atom.

84. (Previously Presented) The ligand analog of claim 83, wherein Y has the formula:



wherein R_1 is an oxygen or sulfur atom, and R_2 and R_3 are independently hydrogen, oxygen, fluorine, chlorine, bromine, iodine, sulfur, hydroxyl, sulfhydryl, amino, alkoxy or phenoxy.

85. (Previously Presented) The ligand analog of claim 78, wherein R is glyoxylpeptide or aminoacylpeptide.

86. (Previously Presented) The ligand analog of claim 66, wherein L is vasoactive intestinal peptide (VIP), Factor VIII, β-amyloid peptide, CD4, extracellular domain of epidermal growth factor receptor (EGFR), human immunodeficiency virus (HIV) gp120, HIV gp160, Lex1 repressor, gag, pol, hepatitis B surface antigen, diphtheria toxin, C. tetani toxin, C. botulinum toxin, or pertussis toxin.

87. (Previously Presented) The ligand analog of claim 66, wherein NuR is an antibody.

88. (Previously Presented) The ligand analog of claim 87, wherein the antibody is a member of the group consisting of alloantibodies to Factor VIII, red blood cell antigens, platelet antigens, kidney antigens, heart antigens and lung antigens.

89. (Previously Presented) The ligand analog of claim 66, wherein NuR is gp120.

90. (Previously Presented) The ligand analog of claim 89, wherein L-E is electrophilic gp120.

91. (Previously Presented) The ligand analog of claim 66, wherein:

L comprises a polypeptide;

the side chain functional group of L is a side chain functional group of alanine, leucine, isoleucine, valine, methionine, cystein, aspartic acid, glutamic acid, asparagine, glutamine, lysine, arginine, phenylalanine, tyrosine, tryptophan, histidine, serine, threonine or proline;

the side chain functional group of L is selected from the group consisting of carboxyl, amino, hydroxyl, sulfhydryl, 4-hydroxy phenyl, phenyl imidazole, indole, methylthioethyl, guanidino, linear alkyl, branched alkyl, cyclic alkyl, linear alkenyl, branched alkenyl, cyclic alkenyl, linear alkynyl, branched alkynyl, cyclic alkynyl, aryl, amide, aldehyde, ketone, phosphate or sulfate;

Y" is a suberoyl, pimeroyl, aminohexanoyl, aminoacetyl, poly(ethylene oxide), α,ω-dicarboxyl or acetylenedicarboxyl group; and

Y' is a amino(4-amidinophenyl)methyl, 2,6-diaminopentyl, 1-amino-4-guanidinobutyl, 1-amino-3-carboxylpropyl, amino(4-carboxylphenyl)methyl, amino (phenyl) methyl, 1-amino-2-phenylethyl, 1-amino-2-methylbutyl, aminomethyl, 2-aminoethyl or 1-aminocyclohexyl group.

92. (Previously Presented) The ligand analog of claim 91, wherein L comprises vasoactive intestinal peptide (VIP), Factor VIII, β-amyloid peptide, CD4, extracellular domain of epidermal growth factor receptor (EGFR), human immunodeficiency virus (HIV) gp120, HIV gp160, Lex1

repressor, gag, pol, hepatitis B surface antigen, diphtheria toxin, C. tetani toxin, C. botulinum toxin, or pertussis toxin.

93. (Previously Presented) An isolated covalent complex comprising:

a ligand analog according to claim 1 that binds noncovalently to a nucleophilic receptor; and

the nucleophilic receptor,

wherein the ligand analog and the nucleophilic receptor are covalently bound to each other.

94. (Previously Presented) A pharmaceutical composition, comprising:

a ligand analog according to claim 1; and

a pharmaceutically acceptable carrier.